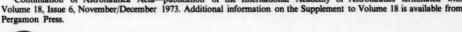
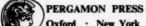
ACTA ASTRONAUTICA

Journal of the International Academy of Astronautics*

CONTENTS

Preface	
L. G. Napolitano	ix
Invited Lecture	
The next 40 years in space	
Thomas O. Paine	1
I. THE SYSTEM	
I. 1. Space Transportation	
Performance of air-breathing single-stage-to-orbit vehicles	
G. E. Dorrington	17
H-II launch vehicle development status in terms of vibration, shock and acoustic	
Kenji Tomioka and Yuji Kohsetsu	43
I. 2. Space Stations and Platforms	
Space Station Freedom: a program update	
William B. Raney	49
Application of the mobile control principle for a space station design V. S. Budnik, A. P. Alpatov, P. A. Belonozhko and N. F. Sviridenko	57
v. S. Budilla, A. I. Alpatov, I. A. Beloliozliko alid Iv. I. Svilideliko	31
Space Station Freedom crew training	
Karol J. Bobko, Edward G. Gibson, Susan A. Maroney and James D. Muccio	65
Tether-assisted servicing of the Columbus Free Flying Laboratory by HERMES	
Alexander Hornik and Wolfgang Seboldt	71
II. THE TECHNOLOGIES: HARD AND SOFT	
II. 1. Technology Applications	
Impact of expert systems on microgravity experimentation: towards third-generation facilities	
L. G. Napolitano, R. Fortezza and F. Mele	79
Intelligent computational systems for space applications	
Henry Lum Jr and Sonie Lau	105
*Continuation of Astronautica Acta—publication of the International Academy of Astronautics terminate	





Oxford · New York · Beijing · Frankfurt · São Paulo · Sydney · Tokyo · Toronto

INDEXED IN Appl. Mech. Rev., Curr. Cont. ASCA, Biosis Data., Cam. Sci. Abstr., Chem. Abstr. Serv., Curr. Cont./Eng. Tech. & Appl. Sci., Eng. Indx, INSPEC Data., PASCAL-CNRS Data., Curr. Cont. SCISEARCH Data., Murdoch Magazine

Using computer graphics to design Space Station Freedom viewing B. S. Goldsberry, B. O. Lippert, S. D. McKee, J. L. Lewis Jr and F. E. Mount	115
B. S. Goldsberry, B. O. Lippert, S. D. McKee, J. L. Lewis Jr and F. E. Mount	113
Integration of a microgravity isolation mount (MGIM) within a Columbus single rack R. G. Owen, D. I. Jones, A. R. Owens and A. A. Robinson	119
The Meteosat-P2 radiation effects experiment A. K. Ward, N. Blower, L. Adams, J. Doutreleau, A. Holmes-Siedle, M. Pignol, J. J. Berneron and M. Mehlen	129
A review of advanced metallic and ceramic materials suitable for high temperature use in space structures	
David Bashford	137
Inflatable, space-rigidized support structures for large spaceborne optical interferometer systems	
M. C. Bernasconi and W. J. Rits	145
II. 2. Astrodynamics and Spacecraft Flight Solar sail dynamics with an extended source of radiation pressure Colin R. McInnes and John C. Brown	155
Traintain for annual to manual with annual World Makes Dailey's house in 1006	
Trajectories for spacecraft encounters with comet Honda-Mrkos-Pajdus'áková in 1996 David W. Dunham, Shao-Chiang Jen and Robert W. Farquhar	161
Airbreathing launchers trajectory optimization Ph. Landiech, C. Aumasson and J. Droz	173
SIGHT: the simulated interactive graphical trajectory system Dan C. Hunt	187
II. 3. Space Power and Propulsion	
Photovoltaic power for a lunar base Geoffrey A. Landis, Sheila G. Bailey, David J. Brinker and Dennis J. Flood	197
Idle mode operation of LE-5A engine Yojiro Kakuma, Kenji Kishimoto, Keiichi Hasegawa, Ryuichi Sekita and Yukio Koyari	205
The evolution of liquid propulsion in France in the last 50 years J. Villain	213
SSTO applications based on super high energy propulsion systems Michael Thierschmann	219
III. THE EXPLOITATION	
III. 1. Space Exploration The Hipparcos mission K. F. Clausen and M. A. C. Perryman	229
New generation optical star trackers for scientific payloads L. Filipov, P. Petrov, Chr. Lukarsky, P. Grancharov, N. Dimitrov, I. Arshinkova, K. Iliev and V. Christov	249
An international Mars Exploration Program Donald G. Rea, Mark K. Craig, Glenn E. Cunningham and Harold L. (Bill) Conway	255

French participation in the Soviet Phobos mission	
F. Rocard, C. Barat, J. L. Bertaux, J. P. Bibring, J. E. Blamont, F. Bonneau, J. P. Delaboudiniere, M. Hamelin and J. G. Trotignon	261
NASA's Small Explorer Program W. Vernon Jones and Nickolus O. Rasch	269
Manned exploration of the solar system Thomas O. Paine	277
An historical perspective on crew rescue and the role of the association of space explorers John Fabian	281
III. 2. Space Utilization: Telecommunications, Earth Observation and Microgravity Regional satellite systems: are they "the solution?"	
Sylvia Ospina	289
SILEX: the first European optical space communications system B. Laurent, J. P. Camus and E. Sein	299
5. 23.00, 0.1. 6.00 0.0	
Earth orbiting technologies for understanding global change Leonard A. Harris, Gordon I. Johnston, Wayne R. Hudson and Lana M. Couch	305
NOAA's satellite programs for the 1990's and into the 21st century	
W. John Hussey	315
Studies and experiments on estimating production of winter wheat with NOAA/AVHRR data Chen weiying and Xiao Qianguan	323
The use of GIST (Geographical Information System Toolkit) as an aid to the geological analysis of satellite imagery and other sources of mappable information: a case study from northern Xinjiang, China	
Yun Shao and Ke Xiao	329
Compart status and future of space data application in fishery accompany	
Current status and future of space data application in fishery oceanography G. P. Vanyushin, Yu. V. Zonov and S. I. Potaichuk	339
International cooperation in Earth observations from space Lisa Robock Shaffer	347
Methodology for microgravity quality assessment, implementation and verification of orbital systems: a challenge for microgravity engineering science	
W. E. Knabe	355
Numerical modelling of enclosure convection J. C. Duh	367
3. C. Dui	501
Selective hypergravity stimulation: its effects on the human balance and gait functions. A model to assess, in normal gravity conditions, some aspects of the perturbations induced on human body by microgravity conditions	
M. Lazerges	375
Chain resistion of debuic convention by collisions in more a final threat to consultable	
Chain reaction of debris generation by collisions in space—a final threat to spaceflight? P. Fichler and D. Rex.	381